



**POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT  
PART 1 - SITE INFORMATION AND ASSESSMENT**

**I. IDENTIFICATION**

01 STATE 02 SITE NUMBER  
IL 3890008946

**II. SITE NAME AND LOCATION**

01 SITE NAME (Legal, common, or descriptive name of site) Argonne National Laboratory-Illinois (ANL-IL) Facility 317, Storage of Mixed Wastes		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER 9700 South Cass Avenue			
03 CITY Argonne	04 STATE IL	05 ZIP CODE 60439	06 COUNTY DuPage	07 COUNTY CODE 043	08 CON DIST 13
09 COORDINATES LATITUDE 41°42'47".0 LONGITUDE 87°59'45".0					

10 DIRECTIONS TO SITE (Starting from nearest public road) From I-55, turn south onto Cass Ave. and then west onto Northgate Road to enter ANL. The 317 Facility is on the south side of ANL-IL and is south of Meridian Road, surrounded by a security fence.

**III. RESPONSIBLE PARTIES**

01 OWNER (if known) U.S. Department of Energy (DOE-CH)		02 STREET (Business, mailing, residential) 9800 South Cass Avenue			
03 CITY Argonne	04 STATE IL	05 ZIP CODE 60439	06 TELEPHONE NUMBER (312) 972-2271		
07 OPERATOR (if known and different from owner) Argonne National Laboratory		08 STREET (Business, mailing, residential) 9700 South Cass Avenue			
09 CITY Argonne	10 STATE IL	11 ZIP CODE 60439	12 TELEPHONE NUMBER (312) 972-3998	Aubrey Smith Envir. Compliance Officer	
13 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL    Department of Energy <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER _____ (Specify) <input type="checkbox"/> G. UNKNOWN					

**14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)**

☐ A RCRA 3001 DATE RECEIVED: \_\_\_\_/\_\_\_\_/\_\_\_\_ MONTH DAY YEAR    ☐ B UNCONTROLLED WASTE SITE (RCRA 103) DATE RECEIVED: \_\_\_\_/\_\_\_\_/\_\_\_\_ MONTH DAY YEAR    ☒ C NONE

**IV. CHARACTERIZATION OF POTENTIAL HAZARD**

01 ON SITE INSPECTION <input checked="" type="checkbox"/> YES DATE 6/22/87 MONTH DAY YEAR <input type="checkbox"/> NO		BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input checked="" type="checkbox"/> F. OTHER DOE-Environmental Survey (Specify)			
CONTRACTOR NAME(S) _____					

02 SITE STATUS (Check one) <input checked="" type="checkbox"/> A. ACTIVE <input type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN	03 YEARS OF OPERATION 1949 BE GROWING YEAR    ENDING YEAR <input type="checkbox"/> UNKNOWN
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04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED Radioactive wastes and mixed wastes, including demolition debris and laboratory equipment and supplies contaminated with radioactivity have been stored on site. Some mixed wastes have been stored at this location, but no known spills of mixed wastes have occurred.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION Radioactivity has been found in the soil around and under the storage pads and vaults for the radioactive wastes. Radioactivity has also been found in the water discharging from the area. Initially, this water was discharging into the forest preserve just south of the 317 Storage Area fence, \*

**V. PRIORITY ASSESSMENT**

01 PRIORITY FOR INSPECTION (Check one if high or medium is checked complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Response) <input type="checkbox"/> A. HIGH (inspection required promptly) <input checked="" type="checkbox"/> B. MEDIUM (inspection required) <input type="checkbox"/> C. LOW (inspect on time available basis) <input type="checkbox"/> D. NONE (no further action needed - complete current disposition form)			
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**VI. INFORMATION AVAILABLE FROM**

01 CONTACT Barry Fritz	02 OF (Agency Organization) DOE-CH, Operational & Envir. Safety Division	03 TELEPHONE NUMBER (312) 972-2271
04 PERSON RESPONSIBLE FOR ASSESSMENT C. L. Cheever	05 AGENCY DOE	06 ORGANIZATION ANL-IL
	07 TELEPHONE NUMBER (312) 972-3311	08 DATE 03/28/88 MONTH DAY YEAR

EPA FORM 7070-12 (7-81)

\* See continuation sheet -

EPA Region 5 Records Ctr.



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CONTINUATION SHEET

Part 1 - Site Information and Assessment

ANL-IL

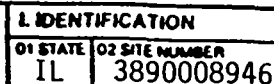
IL 3890008946

Facility 317, Storage of Mixed Wastes

Description of Potential Hazard to Environment and/or Population:

but this discharge has been eliminated, and the water is being collected and tested for radioactivity. The water is discharged to the ANL lab sewer or treated, depending upon test results.

The swale in the Waterfall Glen Nature Preserve, where the water discharged, was surveyed for radioactivity. Soil was removed from the immediate vicinity of the outfall to obtain an acceptably low level of residual radioactivity.



☒ I HIGHLY VOLATILE  
☐ J. EXPLOSIVE  
☐ K REACTIVE  
☐ L INCOMPATIBLE  
☐ M NOT APPLICABLE

- (1) 1986 Annual Site Environmental Report for Argonne National Laboratory (Report ANL-87-9) by N. Golchert and T. Duffy.
- (2) Phase I CERCLA Program, ANL-IL Installation Assessment Report (required by DOE order 5480.14), July 1986. \*

CONTINUATION SHEET

Part 2 - Waste Information

ANL-IL

IL 3890008946

Facility 317, Storage of Mixed Wastes

Sources of Information:

- (3) 1988 Inventory of Federal Hazardous Waste Activities (for ANL-IL).
- (4) Environmental Assessment Related to the Operation of Argonne National Laboratory (DOE/EA-0181). August 1982.
- (10) ANL-IL internal memo from N. W. Golchert, February 9, 1988, Sample 87Y128.



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT  
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

L IDENTIFICATION

D1 STATE D2 SITE NUMBER  
IL 3890008946

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A GROUNDWATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED 23,000

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☒ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

The potential for groundwater contamination exists. Groundwater in some of the ANL-IL facility is in the perched condition because of the relative impermeability of the underlying silty clay. This clay can restrict downward water flow and \*

01 ☒ B SURFACE WATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED 0

02 ☒ OBSERVED (DATE 12/16/86) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

Water samples were collected upstream and downstream from the discharge pipe which was discharging just south of the 317 area to a stream which runs south of the area. Samples collected downstream of the discharge pipe contained higher \*

01 ☒ C CONTAMINATION OF AIR

03 POPULATION POTENTIALLY AFFECTED 31,000

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☒ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

The potential for air contamination exists in that if the soil is very dry, contaminated soil particles may be picked up by the wind. Also, tritiated water may evaporate into the atmosphere. ANL-IL continuously monitors the radioactive \*

01 ☐ D FIRE/EXPLOSIVE CONDITIONS

03 POPULATION POTENTIALLY AFFECTED \_\_\_\_\_

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

01 ☒ E DIRECT CONTACT

03 POPULATION POTENTIALLY AFFECTED 30 employees

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☒ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

The potential for direct contact with radioactive contaminated soil or water does exist for employees who enter the area for work, monitoring or inspection purposes. The potential for contact by non-employees is controlled since the entire ANL-IL site is controlled by a security fence and a continuous onsite security force. \*

01 ☒ F CONTAMINATION OF SOIL

03 AREA POTENTIALLY AFFECTED 1

02 ☒ OBSERVED (DATE 12/17/86) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

Soil samples collected in the 317 storage area were found to be contaminated with Tritium, strontium-90, cesium-137 and cobalt-60.

(Ref. (9) p. 3.)

01 ☒ G DRINKING WATER CONTAMINATION

03 POPULATION POTENTIALLY AFFECTED 23,000

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☒ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

In the vicinity of ANL-IL only subsurface water (from both shallow and deep aquifers) and Lake Michigan water are used for drinking purposes. The potential for contamination of groundwater used for drinking purposes does exist. Two principal \*

01 ☒ H WORKER EXPOSURE/INJURY

03 WORKERS POTENTIALLY AFFECTED: 30 employees

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☒ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

The potential for worker exposure to contaminated soil or water does exist for employees who enter the area for work, monitoring or inspection purposes. However, to date, no such worker exposure has been reported.

01 ☐ I POPULATION EXPOSURE/INJURY

03 POPULATION POTENTIALLY AFFECTED \_\_\_\_\_

02 ☐ OBSERVED (DATE \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

04 NARRATIVE DESCRIPTION

## CONTINUATION SHEET

### Part 3 - Description of Hazardous Conditions and Incidents

ANL-IL

IL 3890008946

#### Facility 317, Storage of Mixed Wastes

##### Groundwater Contamination:

create a lateral perched water flow condition. The groundwater pattern in the area would probably follow the area topography, flowing southeasterly toward the Des Plaines River. Contaminated water may percolate downward into the perched groundwater and migrate in a southeasterly direction offsite. (Ref. (5) p. 2.)

Population = 3,000 employees + 20,000 residents within 3 miles and north of the Des Plaines River.

##### Surface Water Contamination:

concentrations of Hydrogen-3, Strontium-90 and Cesium-137, than the upstream sample.

Surface water in the immediate area is not used for drinking water or recreational purposes.

(Ref. (9) Table 1.)

##### Contamination of Air:

content of air particulate matter by collecting and analyzing air-filter samples. One collection point for the air-filter samples is the southwest corner of the 317 area. No significant deviations were found between ANL-IL perimeter sampling and offsite sampling at points up to 15 miles away. (Ref. (1) p. 21-30).

Population = 3,000 employees + 28,000 residents in 3 miles.

##### Direct Contact:

In addition, the 317 area is controlled by an additional security fence.

## CONTINUATION SHEET

### Part 3 - Description of Hazardous Conditions and Incidents

ANL-IL

IL 3890008946

#### Facility 317, Storage of Mixed Wastes

##### Drinking Water Contamination:

aquifers are used as water supplies in the vicinity of ANL-IL. The upper aquifer is the Niagaran-Alexandrian dolomite which is about 200 ft. thick in the ANL-IL area and has a piezometric surface between 50 and 100 ft. below the ground surface. The lower aquifer is the Galesville sandstone, which lies between 490 and 1,500 ft. below the surface. Maquoketa Shale separates the aquifers and retards hydraulic connection between the aquifers. The four domestic water wells now in use at ANL-IL are about 300 ft. deep in the Niagaran dolomite. All four wells are located north of the site. The nearest well is approximately 1 mile northeast of the site. Groundwater in the area of the site probably flows toward the southeast.

The distance to the nearest well is 1 to 2 miles and a population of 3,000 - 10,000 is served. (These are the ranges which were used for HRS scoring of other 317 facility sites in Ref. 2.)

Population = 3,000 employees + 20,000 residents within 3 miles and north of the Des Plaines River.

(Ref. (1) p. 8, 12, Ref. (2) p. 6 and Attachment 1, (Ref. (5) p. 1-2.)



POTENTIAL HAZARDOUS WASTE SITE  
PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER  
IL 3890008946

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ 02 DAMAGE TO FLORA  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☒ 02 DAMAGE TO FAUNA  
04 NARRATIVE DESCRIPTION (include name(s) of species)

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☒ POTENTIAL ☐ ALLEGED

The potential for damage to fauna does exist since a number of animals do wander freely at ANL-IL and in the forest preserve. To date, no damage to fauna as a result of exposure to radioactivity from the 317 storage area has been reported.

01 ☐ 02 CONTAMINATION OF FOOD CHAIN  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ 02 UNSTABLE CONTAINMENT OF WASTES  
(Ex. ex. small standing liquid leaking drums)

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: \_\_\_\_\_ 04 NARRATIVE DESCRIPTION

01 ☒ 02 DAMAGE TO OFFSITE PROPERTY  
04 NARRATIVE DESCRIPTION

02 ☒ OBSERVED (DATE: 11/14/86) ☐ POTENTIAL ☐ ALLEGED

A pipe was discovered to be discharging water into the Waterfall Glen Nature Preserve about 200 ft. south of the 317 site fence. A sample was collected on November 14, 1986, and radiochemical analysis indicated the presence of:  $(107 \pm 1) \times 10^{-9} \mu\text{Ci/ml}$  \*

01 ☐ 02 CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

01 ☐ 02 ILLEGAL/UNAUTHORIZED DUMPING  
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: \_\_\_\_\_) ☐ POTENTIAL ☐ ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 23,000 \*

IV. COMMENTS

The radioactive wastes are placed in drums and bins which meet DOT requirements. Bins and drums which do not require shielding for offsite shipments are kept at grade level on a gravel pad. Those that do require such shielding are held in six underground shielded vaults equipped for different sizes of material and different levels of \*

V. SOURCES OF INFORMATION (Cite specific references, e.g., State files, sample analysis, reports)

- (1) 1986 Annual Site Environmental Report for Argonne National Laboratory (Report #ANL-87-9) by N. Golchert and T. Duffy.
- (2) Phase I CERCLA Program, ANL-IL Installation Assessment Report (required by DOE order 5480.14), July 1986. \*

Revised 10/10/83 (7/83)

\* See continuation sheet

## CONTINUATION SHEET

### Part 3 - Description of Hazardous Conditions and Incidents

ANL-IL

IL 3890008946

#### Facility 317, Storage of Mixed Wastes

##### Damage to Offsite Property:

of nonvolatile beta,  $(2822 \pm 128) \times 10^{-9}$  ci/ml of strontium-90, and  $(19.6 \pm 2.2) \times 10^{-9}$  ci/ml of cesium-137. The source of the water was found to be from the footing drains around the radioactive waste storage vaults within the 317 area.

##### Total Population Potentially Affected:

(3,000 employees + 20,000 residents within 3 miles and north of river) (Ref. (1) p. 8.)

##### Comments:

radioactivity. The wastes are stored in the 317 storage area until they are shipped offsite. (Ref. (4) p. 2-24.)

##### Sources of Information:

- (3) 1988 Inventory of Federal Hazardous Waste Activities (for ANL-IL).
- (4) Environmental Assessment Related to the Operation of Argonne National Laboratory (DOE/EA-0181), August 1982.
- (5) ANL-IL Intra-Laboratory Memo, to N. W. Golchert from S. Y. Tsai; Subject: Groundwater Monitoring Plan for the 317-319 Area; September 17, 1985.
- (6) Site Plan (ANL map), January 9, 1986 revision.
- (7) ANL map with PA legend and locations, April 1988.
- (11) ANL-IL Intra-laboratory memo to D. P. O'Neil from N. W. Golchert; Subject: Final Report on the Radiological Characterization of 317/319 Areas; April 21, 1987.

Summary Report for Preliminary Assessment of the ANL-IL

Facility 317 - Storage of Mixed Wastes

4/13/88

The Facility 317 underground concrete vault storage facilities have been found to have released radioactivity into the surrounding soil and to water from the vault footings drainline. This drainline discharged by gravity flow into a drainage swale south of the facility in the Waterfall Glen Nature Preserve (formerly ANL-IL).

The drainline has been cut and capped off and water from the footings tile system is now pumped out, transported to a building, checked for radioactivity, and released to the Lab sewer system.

There is a monitoring well south of the 317 Facility.

Recommendations: (1) Install two deep monitoring wells south of Facility 317 to further assess potential contamination of groundwater.

(2) Complete a Site Inspection (SI).